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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)					PE 0603176C I Advanced Concepts and Performance Assessment							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	28.771	14.534	12.996	13.017	-	13.017	14.267	14.899	15.235	16.224	Continuing	Continuing
MD71: Advanced Concepts and Performance Assessments	27.741	13.961	11.612	11.628	-	11.628	11.568	11.791	12.039	12.267	Continuing	Continuing
MD40: Program-Wide Support	1.030	0.573	0.829	0.605	-	0.605	0.648	0.671	0.743	0.740	Continuing	Continuing
MC71: Cyber Operations	-	0.000	0.555	0.784	-	0.784	2.051	2.437	2.453	3.217	0.000	11.497
Program MDAP/MAIS Code: 362												
Note N/A												
A. Mission Description and Budget Item Justification												
The Advanced Concepts & Performance Assessments PE delivers an integrated government concept definition, simulation, and analysis capability. It also centralizes assessment of advanced ballistic missile defense technology. Delivering insight into the performance of proposed concepts extends MDA's ability to address evolving threats for the warfighter.												
Subject matter experts provide independent assessments of government, university, and industry technology concepts, used in concert with systems engineering requirements, to support acquisition strategy decisions and define technology focus areas. The innovative structured concept definition and assessment methodology enables the MDA to quickly validate focus areas, verify contractor technology solutions, and evaluate promising concepts in future Ballistic Missile Defense System (BMDS) architectures. This methodology significantly enhances MDA's ability to assess technology concepts while decreasing the cost of development through: - Independent model-based simulations of industry technology concepts to inform the systems engineering process - Digital simulation and hardware-in-the-loop performance assessments of algorithms and hardware concepts prior to expensive live fire test events - End-to-end testing of technology concepts integrated with weapon systems and Command, Control, Battle Management and Communications												
Performance assessment of advanced concepts incorporates Better Buying Power philosophy in the earliest stages of technology development to maximize the efficiency of technology investments. Performance assessment supports evaluation and analysis of capabilities across right and left of launch.												

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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	17.880	12.996	13.741	-	13.741
Current President's Budget	14.534	12.996	13.017	-	13.017
Total Adjustments	-3.346	0.000	-0.724	-	-0.724
• Congressional General Reductions	-2.865	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.131	0.000			
• SBIR/STTR Transfer	-0.350	0.000			
• FY 2017 Request for Additional Appropriations	0.000	0.000	0.000	-	0.000
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	-0.724	-	-0.724
Change Summary Explanation					
N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment				Project (Number/Name) MD71 / Advanced Concepts and Performance Assessments			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD71: Advanced Concepts and Performance Assessments	27.741	13.961	11.612	11.628	-	11.628	11.568	11.791	12.039	12.267	Continuing	Continuing
Note N/A												
A. Mission Description and Budget Item Justification Advanced Concepts & Performance Assessment centralizes advanced technology concept modeling, simulation, software, and analysis. Integrating models of promising technical solutions into BMDS system-level simulations enables leadership to make data driven acquisition and technology investment decisions. This funding capitalizes on the innovation of small business, universities, Federally Funded Research and Development Centers, and University Affiliated Research Centers to pursue a broad range of hardware, software, models, algorithms, trade studies and analysis. These innovations bring together government developed models representing existing and future ballistic missile defense architectures, technology concepts, and advanced algorithms to provide detailed assessments of concept performance and inform investment decisions. These innovations, combined with a robust high performance computing infrastructure, provide a unique in-house government capability to demonstrate and assess technology concepts.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Advanced Concepts and Performance Assessment									13.961	11.612	11.628	
Description: Provide quantitative assessments that define the benefits of technology investments and inform requirements using an integrated concept definition, simulation, and performance analysis capability. A staff of diverse subject matter experts deliver independent government performance evaluations which exercise kinetic and non-kinetic missile defense concept representations against the broad spectrum of evolving threats.  - Assess forward-based airborne electro-optical infrared and advanced sensors - Provide independent government assessments of industry sensor (e.g. Advanced Sensor), directed energy (e.g. Low Power Laser Designator), Space Based Interceptor and kill vehicle (e.g. Multi Object Kill Vehicle) technology concepts - Examine directed energy pathfinder solutions - Study low earth orbit satellite capabilities - Assessment and identification of promising boost phase intercept capabilities - Perform concept performance against emerging advanced threats including hypersonic threat testing scenarios - Mature advanced technology concepts through lab, ground, and flight test data - Apply concepts in simulated exercises with weapon systems - Work with the BMDS Architect and MDA Systems Engineer to design concepts, build models and assess technology concepts for the future BMDS												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Missile Defense Agency							<b>Date:</b> February 2018				
<b>Appropriation/Budget Activity</b> 0400 / 3				<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>			<b>Project (Number/Name)</b> MD71 / <i>Advanced Concepts and Performance Assessments</i>				

  

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
- Develop and extend modeling techniques - Focus research and engineering activities from university and small business partners to identify suitable technology and concepts that improve BMDS performance through a rapid innovation model based on engineering test bed Specific and/or unique accomplishments to each FY are as follows:  <b>FY 2018 Plans:</b> - SEE ABOVE.  <b>FY 2019 Plans:</b> - SEE ABOVE.  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	13.961	11.612	11.628

  

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603178C: <i>Weapons Technology</i>	47.403	5.495	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	27.185	20.184	20.365	-	20.365	20.778	21.194	21.652	22.036	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	54.395	252.879	189.753	-	189.753	205.645	254.130	122.494	52.373	Continuing	Continuing
<b>Remarks</b>											
<b>D. Acquisition Strategy</b>											
Partner with small businesses, the Aviation & Missile Research Development & Engineering Center, Federally Funded Research and Development Centers, and University Affiliated Research Centers to provide concept modeling and assessment capability. This innovative strategy leverages agency and partner subject matter experts and government model-based assessments to inform Better Buying Power acquisition decisions.											
<b>E. Performance Metrics</b>											
N/A											

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Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD40: Program-Wide Support	1.030	0.573	0.829	0.605	-	0.605	0.648	0.671	0.743	0.740	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Program Wide Support (PWS) contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It includes Government Civilians and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

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<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>				<b>Project (Number/Name)</b> MC71 / <i>Cyber Operations</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC71: <i>Cyber Operations</i>	-	0.000	0.555	0.784	-	0.784	2.051	2.437	2.453	3.217	0.000	11.497
<p><b>Note</b> N/A</p> <p><b>A. Mission Description and Budget Item Justification</b>  This project supports the monitoring and tracking of Cybersecurity mitigations as required in the Department of Defense Instruction Number 8510.01 which establishes risk Management Framework (RMF) requirements for DoD Information Technology (IT). Funds in this project implement and sustain DoD-required RMF and associated Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance System Security Manager (PM/ISSAM) Plans of Action and Milestones (POAMs) for enabling M&amp;S mission systems. This project captures the RMF documentation (artifacts, validation results, Information Assurance Risk Assessment results, and MDA Authorizing Official (AO) and Chief Information Officer (CIO) accreditation decisions) into the Defense Information Systems Agency's (DISA) Enterprise Mission Assurance Support Service (eMASS) system. Hardware and software upgrades required to meet DoD standards are supported by funding in this project. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Security Management Act.</p>												
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>									<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	
<p><b>Title:</b> Information Assurance / Cyber Network Defense</p> <p><b>Description:</b> Funds network defense and Information System Security Manager activities including:  -Conduct cybersecurity/information assurance engineering and architecture planning.  -Plan and test information assurance controls.  -Develop DoD Risk Management Framework certification and accreditation packages.  -Conduct Controls Validation Testing of systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.  -Conduct annual information assurance reviews to assess compliance in implementing and maintaining information assurance controls.  Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2018 Plans:</b>  - SEE ABOVE.</p> <p><b>FY 2019 Plans:</b></p>									0.000	0.555	0.784	

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
- SEE ABOVE.				
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> The increase in FY2019, expands on-going Risk Management Framework development to meet certification and accreditation standards.				
<b>Accomplishments/Planned Programs Subtotals</b>		0.000	0.555	0.784
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b> N/A				
<b>E. Performance Metrics</b> N/A				